

March 31, 2023

Sen. Ron Wyden, Chairman
Sen. Charles Grassley
United States Senate Committee on Finance
219 Senate Dirksen Office Building
Washington, D.C. 20510

VIA ELECTRONIC MAIL

Dear Chairman Wyden and Senator Grassley,

Thank you for your March 20 letter inquiring about the OPTN Computer system (UNet) service outage that occurred Feb. 15, 2023. I appreciate the opportunity to respond to your questions and concerns.

Most importantly, I want to clarify that to our knowledge, **there was no impact to patients during this occurrence**. I share your concern about patient safety, and I can confirm that during this service outage, there were no reported negative effects on any donor or recipient activity taking place within the entire organ donation and transplant network. UNOS staff conducted prompt outreach to all OPTN members who contacted us during the outage and confirmed that all donor and recipient functions being performed within UNet before the interruption were completed successfully once service was restored. I would be happy to further discuss how this outage had no negative impact on patients when we brief you.

I also wanted to note that since the outage, UNOS staff **have held daily calls with both the Health Resources Service Administration (HRSA) and the U.S. Digital Service (USDS)**. We are grateful for their support and availability.

Microsoft has been unable to determine the cause of the disruption, but its software engineers are continuing their review and analysis.

As requested in your letter, we are providing the following: **details of the outage; how we communicated the outage; and steps we have taken to prevent similar events in the future.**

Details of the outage

On Feb. 15 at 7:05 a.m., UNOS Technical Operations Center began receiving UNet availability automated monitoring alerts. Shortly thereafter, the UNOS Organ Center and Customer Service Desk began receiving calls from users at OPTN member institutions (members include OPOs, transplant hospitals, and histocompatibility labs), reporting that UNet was unavailable. The UNOS Organ Center is a 24/7/365 operation that coordinates with partners across the nation to assist in placing deceased donor organs (primarily kidneys) for transplantation.

Troubleshooting indicated the SQL Server Always On availability cluster was in an offline state, which rendered UNet inaccessible. The Always On feature is Microsoft's high-availability and

disaster recovery solution for enterprise databases.

Our ongoing investigation has revolved around two questions:

1. Why the active node in the availability cluster was rendered unreachable.
2. Why the Always On service, rather than automatically failing over (re-routing) to another healthy node, instead took the entire cluster offline, remaining in this state until UNOS engineers restarted the affected active node at 7:55 a.m., which brought the availability cluster back online and restored UNet to full operability.

Microsoft support engineers investigating this incident have acknowledged that while the condition should have “eventually” healed itself and come back online, given the duration of the incident, we took the appropriate steps by having our engineers restart the active node, which ultimately restored service.

Communicating the outage

We alerted HRSA to the outage five hours after service was restored and with assurances that **no other issues were experienced, no patients were impacted, no data was lost, and no patient data was compromised**. The OPTN contract requires UNOS to report system failures to HRSA within one hour. We did not do that in the Feb. 15 instance. We have since conducted employee training and will be diligent in the future to report any system outage to HRSA as required by the OPTN contract.

During the incident, we posted the outage on our system availability status page, which is accessible to the general public and provides real-time visibility into the health of the UNet system (any outages such as this remain visible to the public for 30 days). UNOS staff also conducted outreach to those individual users who called to report issues to confirm they were able to continue their work and that no patients were negatively impacted. Post-incident, we provided a detailed update on the outage to Network Operations and Oversight Committee (NOOC) Feb. 16. All NOOC meetings are open to the general public and live streamed on the OPTN website.

Response

In response, UNOS has implemented more targeted system alerts for this specific type of incident, allowing us to pinpoint and remediate the issue within minutes if it happens again.

As we continue to work with HRSA, USDS and vendors to determine the root cause, we will learn more about what additional improvements we can implement to avoid a similar event in the future.

HRSA and USDS site visit and ongoing collaboration

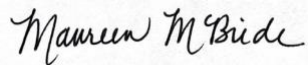
As mentioned above, since this service outage, we have held daily calls with both HRSA and the USDS. Initially, HRSA and USDS requested that there be calls twice a day, but beginning March 8, they have reduced these calls to once per day. These daily calls are ongoing.

HRSA and USDS staff conducted an on-site visit on Feb. 22 to review the incident details, as well as our approach to investigating the root cause. UNOS reviewed all the potential contributing factors known at the time with HRSA and USDS and discussed the plan for proving or disproving each as the root cause. During the visit, USDS engineers affirmed our approach. The on-site visit was initially planned for two days; however, after the first day, both USDS and HRSA concluded that we were addressing the issue correctly and chose to cancel the second day of the visit.

Since the onsite review by HRSA and USDS, we have facilitated multiple troubleshooting calls with Microsoft, with HRSA and USDS also participating. We have been able to demonstrate to Microsoft our re-creation of the failure in our testing environment. However, Microsoft has thus far not been able to re-create the issue in their own environment. Currently, Microsoft is continuing to review the system logs and attempting to re-create the problem in their lab. Most recently, we held a call with another Microsoft escalation team March 27 who collected additional information about the incident and our testing scenario, and they are continuing their analysis.

We look forward to providing you and members of your staff with a detailed briefing about this incident, our answers, and the steps we have taken to further improve our IT infrastructure. I appreciate your continued interest in improving the nation's organ donation and transplant system and I look forward to further collaboration.

Sincerely,

A handwritten signature in black ink that reads "Maureen McBride". The signature is written in a cursive, flowing style.

Maureen McBride, Ph.D.
Interim Chief Executive Officer, United Network for Organ Sharing